

NOTES ON *ERIOCHLOA WEBERBAUERI* (POACEAE: PANICEAE)

ROBERT D. WEBSTER

*United States Department of Agriculture
Systematic Botany & Mycology Laboratory
Bldg. 003, Rm. 235, BARC-West
Beltsville, MD 20705, USA*

PAUL M. PETERSON

*Department of Botany
National Museum of Natural History
Smithsonian Institution
Washington, DC 20560, USA*

ROBERT B. SHAW

*Department of Range Science
Colorado State University
Fort Collins, CO 80526, USA*

ABSTRACT

Recent collections from Ecuador have uncovered the presence of a species, *Eriochloa weberbaueri* Mez, for which little comparative taxonomic information is available. Previously reported only from Peru, this species is characterized by features unique within the genus. A complete morphological description is presented and based on studies of all available specimens. Relationships with other species are discussed and based on the presence of shared taxonomically important characters. Diagnostic features of *E. weberbaueri* include a muticous and smooth upper floret, perennial habit, paired spikelets, spikelets 3.1–3.9 mm long, and the absence of a first glume.

RESUMEN

Recolecciones recientes en Ecuador han descubierto la presencia de una especie, *Eriochloa weberbaueri* Mez, de la que hay disponible muy poca información taxonómica comparativa. Citada previamente sólo de Perú, esta especie presenta unas características únicas dentro del género. Se presenta una descripción morfológica completa en base a estudios de todos los especímenes disponibles. Se discuten las relaciones con otras especies en base a la presencia de caracteres compartidos taxonómicamente importantes. Los caracteres diagnósticos de *E. weberbaueri* incluyen una flor superior mútica y lisa, hábito perenne, espiguillas pareadas, espiguillas 3.1–3.9 mm de largas y la ausencia de la primera gluma.

INTRODUCTION

The Paniceae is a tribe of grasses characterized by a paniculate inflorescence, spikelets with two florets, the lower floret sterile, the upper floret

fertile and coarser in texture than the lower floret. *Eriochloa* Kunth, a member of this tribe, consists of about 30 species and occurs throughout the tropical, subtropical, and warm temperate regions of the world. Presence of a cup-like callus at the spikelet base differentiates *Eriochloa* from the other 105 genera of the Paniceae. Additional significant characters used to differentiate *Eriochloa* within the tribe include an indurate upper floret, disarticulation at the spikelet base, inflorescence with racemose primary branches, and the absence of a bristle (Webster & Valdez 1988, Webster et al. 1989). Significant characters used to differentiate the species of *Eriochloa* include spikelet shape, presence of an awn on the upper floret, spikelet length, presence of hairs in the inflorescence, spikelet arrangement, longevity, and the relative length of the florets (Webster 1987, Shaw & Webster 1987).

Recent collections by Peterson and others in Ecuador have revealed the presence of specimens which do not match the morphological characteristics of taxa commonly associated with that area. The characteristics of this taxon were recorded in DELTA format (Dallwitz 1980, Dallwitz et al. 1993) and compared against all other recognized species of *Eriochloa*. This analysis indicated these specimens could not be differentiated from a poorly known Peruvian species, *E. weberbaueri* Mez. Hitchcock (1927) states that this species was known only from the type specimen. Tovar (1993) list only two specimens, the type and Anderson 740, which was collected in the same area of Peru. A survey of collections at the U.S. National Herbarium revealed the presence of three specimens (Anderson 740, Sanchez Vega 1031, Camp E-2346) which possess the diagnostic characteristics of *E. weberbaueri*. In addition, G. Davidse has identified two MO collections (Sanchez et al. 3567 & Smith 6190) of the same species.

Diagnostic features of *Eriochloa weberbaueri* include a muticous upper floret, a smooth upper floret, paired spikelets on the primary inflorescence branches, perennial habit, spikelet length (3.1–3.9 mm long), first glume absent, and the absence of elongate rhizomes. *Eriochloa distachya*, *E. michauxii*, *E. polystachya*, *E. sericea*, and *E. weberbaueri* are the only species with a muticous upper floret and perennial habit. Of this subgroup, *E. distachya* and *E. weberbaueri* are the only species with long hairs associated with the pedicel. *Eriochloa michauxii*, *E. polystachya*, and *E. weberbaueri* share the presence of paired spikelets. Therefore, the presence of hairs at the pedicel apex and paired spikelets distinguishes *E. weberbaueri* within this subgroup of morphologically related species. Perhaps the most diagnostic characteristic of *E. weberbaueri* is the smooth and relatively shiny upper floret. This characteristic appears to be unique for *E. weberbaueri* within the genus. This species appears to be associated with drier environments at elevations between 1,500 and 3,000 meters.

SPECIES DESCRIPTION

Eriochloa weberbaueri Mez, Bot. Jahrb. Engler 56: Beibl. 125:11. 1921.

TYPE: PERU. Dept. Cajamarca: A. *Weberbauer* 4135 (HOLOTYPE: B; photographs and fragments at US!).

Plants perennial; stoloniferous; rhizomatous. Rhizomes with compacted nodes; with glabrous scales. Flowering culms 3–8 dm tall; not caespitose; erect from the base; not rooting at the lower nodes; with a hard knotty base; terminated by a solitary inflorescence; branched from the base; 2–5-noded. Nodes not swollen; pubescent. Internodes hollow; glabrous; smooth; neither viscid nor glaucous. Leaves cauline or basal; green; without auricles. Sheaths 6–13 cm long; overlapping or not overlapping; not inflated; smooth; glabrous; rounded; not keeled; not ciliate; closed. Ligule a fringe of hairs; 0.5–1.2 mm long. Collar not differentiated; pubescent. Leaf blades 7–20 cm long; 1.5–5 mm wide; linear; flat, involute, or convolute; flexuous; spreading; lax; smooth on the lower and upper surfaces; glabrous on the lower surface; glabrous or hairy (minutely pubescent) on the upper surface; with a truncate base; with flat margins; with margins not thickened; with scabrous margins; with glabrous margins; with the midrib not obviously differentiated; lacking obvious transverse veins; acuminate. Prophyllum with scabrous nerves; with pronounced keels. Peduncle 160–300 mm long; glabrous.

Panicle 10–35 mm wide; fully exerted at maturity; oblong. Lowermost inflorescence node not differentiated; hairy. Main axis present; 60–150 mm long; straight; stout; hairy; pubescent; with hairy axils; with quaquaversal primary branches. Primary branches 10–30 mm long; 0.3–0.5 mm wide; appressed to the main axis or spreading; with appressed secondary branches; with secund spikelets; not whorled; 8–13 on the main axis; straight; not winged; smooth; hairy; setose; ciliate; with loosely arranged spikelets. Rachis terminating in a spikelet. Pedicels present; 0.2–0.5 mm long; straight; scabrous; hairy; setose; with hairy apices; discoid at the apex; perpendicular with the spikelet base; concave. Disarticulation at the spikelet base. Callus differentiated; not prolonged into a stipe; not flared to form a discoid receptacle; not oblique; rounded; smooth; glabrous. Cleistogamous inflorescence absent.

Spikelets 3.1–3.9 mm long; 0.9–1.1 mm wide; paired; densely overlapping; evenly distributed on the rachis; not divergent from the axis; homomorphic; adaxial; green; dorsiventrally compressed; lanceolate. First glume absent. Rachilla pronounced below the second glume; not pronounced between the florets. Second glume 3.0–3.7 mm long; 1 times spikelet length; 1 times the length of the lower floret; lanceolate; membranous; rounded on the back; smooth; 5-nerved; hairy; pubescent; acute to acuminate; muticous. Fertile florets 1. Sterile florets 1. Lower floret lacking



FIG. 1. *Eriochloa weberbaueri*. A. Habit. B. Ligule. C. Primary inflorescence branch. D. Spikelet and pedicel apex. E. Spikelet base and pedicel apex. F. Upper floret. G. Upper lemma enclosing stamens. H. Stamens and stigmas.

stamens. Lemma of lower floret 2.8–3.7 mm long; lanceolate; membranous; smooth; with equal internerve spacing; 3-nerved; the nerves pronounced but not swollen; the nerves smooth; not keeled; with glabrous margins; lacking a central longitudinal groove; acute; muticous; hairy. Lower lemma hairs not forming a distinct horizontal line; shorter than the upper floret; pubescent; smooth and terete; without apical modifications; white. Palea of lower floret absent. Upper floret 0.9 times the length of the lower floret. Lemma of upper floret 2.3–2.8 mm long; lanceolate to ovate; cartilaginous; slightly convex; smooth; yellow; shiny; with involute margins; with margins of the same texture as the body; glabrous; 3-nerved; the nerves not pronounced; with smooth nerves; without basal modifications; not differentiated at the apex; entire; acute; muticous. Germination flap conspicuous. Palea of upper floret well-developed; enclosed at the apex; cartilaginous; smooth; the base neither swollen nor protruding; the nerves pronounced but not winged. Lodicules about 0.15 mm long; the nerves not pronounced. Stamens 3. Anthers 1.5–1.7 mm long; yellow. Stigmas yellow to orange. South America: Ecuador & Peru.

Specimens Examined: SOUTH AMERICA. ECUADOR. **Provincia de Azuay:** 10.2 km N of Ona on the Pan American Hwy at the bridge crossing the Rio Leon, elev. 1880 m, 24 Apr 1990, *P.M. Peterson, C.R. Annable and M.E. Poston* 8915 (US!); 83 km S of Cuenca on road to Loja, crossing of Rio Leon, elev. 1800 m, 30 May 1990, *P.M. Peterson and E.J. Judziewicz* 9378 (US!); valley of the rio Paute, between Paute and Cuenca, 26 Apr 1945, *Camp E-2346* (US!). PERU. Santa Cruz, *I. Sanchez Vega* 1031 (US!); 11 Apr 1948, *Anderson* 740 (US!).

ACKNOWLEDGMENTS

Gratitude is extended to Dr. Gerrit Davidse for making valuable suggestions concerning the taxonomy of this group.

REFERENCES

- DALLWITZ, M.J. 1980. A general system for coding taxonomic descriptions. *Taxon* 29:41–46.
- DALLWITZ, M.J., PAINE, T.A. and ZURCHER, E.J. 1993. User's guide to the DELTA system: a general system for processing taxonomic descriptions. 4th ed. CSIRO Division of Entomology: Canberra, Australia.
- HITCHCOCK, A.S. 1927. The grasses of Ecuador, Peru, and Bolivia. *Contr. U.S. Natl. Herb.* 24:428–430.
- SHAW, R.B. and R.D. WEBSTER. 1987. The genus *Eriochloa* (Poaceae: Paniceae) in North and Central America. *Sida* 12:165–207.
- TOVAR, O. 1993. *Eriochloa* in las gramineas (Poaceae) del Peru. *Ruizia* 13:343–347.
- WEBSTER, R.D. 1987. The Australian Paniceae (Poaceae). J. Cramer, Berlin-Stuttgart.
- _____, and J. VALDES REYNA. 1988. Genera of Mesoamerican Paniceae (Poaceae: Panicoideae). *Sida* 13:187–221.
- _____, J.H. KIRKBRIDE and J. VALDES REYNA. 1989. New World genera of the Paniceae (Poaceae: Panicoideae). *Sida* 13:393–417.